



Technical Data Sheet

Pressure / Temperature / Humidity / Air Velocity / Airflow / Sound level



TM 200 U *thermometer*

Special determination of U coefficient



KEY POINTS

- > Interchangeable measurement module
- > User-friendly (Joystick browsing)
- > Large graphic display
- > Blue backlight
- > 8,000 measurement points
- > Up to 6 measurements simultaneously
- > Wireless communication between instrument and PC
- > Wireless probes

THE TM 200 U THERMOMETER

The TM 200 U thermometer can display simultaneously :

- > U coefficient
- > External temperature (°C)
- > Surface temperature of wall face (°C)
- > Ambient temperature (°C)

TM 200 U KIT INCLUDES

- > 4 thermocouple temperature probes : 3 calibrated wireless probes (ref. : FK-PFA-2-MM) and 1 calibrated ambient probe (ref. : SKA 110)
- > 1 ambient Pt100 wire probe (ref. : SPA 150 RF) calibrated
- > 1 thermocouple module
- > 1 protective housing (ref. CE200)
- > Fixing paste for probes

CONNECTION

Wireless connection

Instrument / PC
Instrument / probe

Smart-system

Wireless or wired probes automatically recognized when connected to the instrument.

Interchangeable modules

1 instrument = more than one range and one parameter available.



FUNCTIONS

Thermometer

THERMOCOUPLE MODULE

- Delta T
- Selection of units
- Minimum / maximum values and hold function
- Storage of 4 thermocouple K, J and T channels
- Calculation of U-value

TEMPERATURE PROBES

- Delta T
- Selection of units
- Minimum / maximum values and hold function
- Storage

Current / voltage reader

Current / voltage module

- Adjustable ranges
- Minimum / maximum values and hold function
- Storage

Software

Datalogger 10



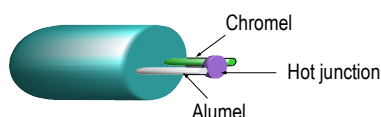
- Multi-parameters recording
- Manual or automatic storage
- Memory : up to 8,000 measurement points or 50 datasets
- User-friendly with printing of customized reports
- Management of instruments pool, follow-up of calibration periods
- Datasets schedule
- Wired or wireless interface

WORKING PRINCIPLE

Thermometer : Thermocouple probe

According to the Seebeck effect, when two wires composed of different metals are joined at both ends, an electric circuit is formed. The voltage increases with temperature.

I.E : Thermocouple K :

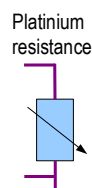


Thermometer : Pt100 probe

Pt100 is resistance with a positive temperature coefficient which varies according to the temperature. The higher the temperature is, the more the value of the resistance increases.

I.E : for 0°C $\approx 100 \Omega$ -

For 100°C $\approx 138,5 \Omega$.



TECHNICAL FEATURES

TM200 connection

On the top :

2 mini-Din connections for SMART-Plus probes

Left side :

1 USB port for KIMO cable only

1 power supply plug

Thermocouple module :

Connection : 4 inputs for male miniature plug of thermocouple type K, J or T Class 1 (as per IEC 584-3 norm)

Display

Graphic display 128x128 pixels

Dim. 50 x 54 mm

Blue backlight

Display of 6 measurements (including 4 simultaneously)

Housing

ABS shock-proof, IP54

Keypad

Metal-coated, 5 key, 1 joystick

Conformity

Electromagnetical compatibility (as per NF EN 61326-1 norm)

Power supply

4 alkaline batteries 1.5 V LR6

Operating environment

Neutral gas

Operating temperature

From 0 to + 50 °C

Storage temperature

From -20 to +80 °C

Auto shut-off

Adjustable from 0 to 120 min

Weight

340 g

Languages

French, English, Dutch, German, Italian, Spanish, Portuguese, Swedish, Norwegian, Finn, Danish

U COEFFICIENT DETERMINATION

U coefficient is the most important value for the evaluation of thermal features of construction elements.

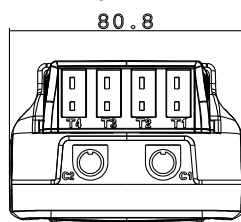
To calculate U coefficient, 3 temperature values are needed : the outside temperature, the surface temperature of the wall face, ambient air temperature. The wireless probe allows to determine the outside temperature easily and quickly when windows are closed. The probe is directly positioned outside and transmits the measurement value to the TM200 instrument through the wireless system.

The two others necessary values are determined with three thermocouple wired probes fixed to the wall face thanks to the fixing paste and to the thermocouple probe of ambient temperature of the room, connected to the module of TM200 instrument.

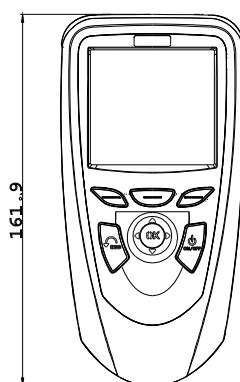
Once the three required temperatures are transmitted to TM200, the device calculates and displays U coefficient.

DIMENSIONS (mm)

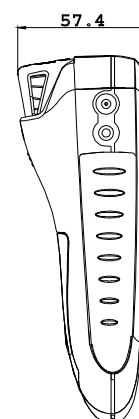
• Top view



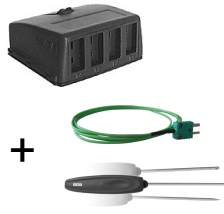
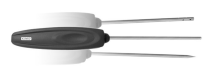
• Front view



• Side view



SPECIFICATIONS

	Measuring units	Measuring range	Accuracy*	Resolutions
CURRENT / VOLTAGE				
	V, mA	From 0 to 2.5 V From 0 to 10 V From 0 to 4/20 mA	±2mV ±10mV ±0.01mA	0.001 V 0.01 V 0.01 mA
THERMOCOUPLE (See related datasheet)				
	°C, °F	K: From -200 to 1300°C J: From -100 to 750°C T: From -200 to 400°C	±1.1°C or ±0.4% of reading** ±0.8°C or ±0.4% of reading** ±0.5°C or ±0.4% of reading**	0.1 °C 0.1 °C 0.1 °C
Pt100 probes (See related datasheet)				
	°C, °F	From -50 to 250°C (According to model)	±0.3% of reading ±0.25°C (According to model)	0.01 °C

*All accuracies indicated in this document were stated in laboratory conditions and can be guaranteed for measurements carried out in the same conditions, or carried out with required compensation.
** The accuracy is expressed either by a deviation in °C, or by a percentage of the value concerned. Only the bigger value is considered.

SUPPLIED WITH ...

X Optional ✓ Supplied with

DESCRIPTION	TM 200 U
Current/voltage module	X
Thermocouple temperature module	✓
K thermocouple probe	✓
RF SMART-Plus Pt100 probe	✓

8 rechargeable batteries with chargee	X
Calibration certificate	✓
Transport case	✓
Tripod	X

Large choice of temperature probes (See related datasheet) :

- ambient
- Food industry penetration
- contact
- General use
- penetration



ACCESSORIES (See related datasheet)

Datalogger-10 : Datalogger-10 PC software for data recording and processing. Wired (LPCF) or wireless (LPCR) interface.

KPIJ : Ammeter clamp with PVC cable, lg. 2m and jack connector.

RTS : Telescopic extension, length 1 m, bent at 90° for measuring probe.

CTC-P : Current/voltage input cable in PVC, 2 m length and jack connector



GST : Silicone heat conductive grease for temperature probes

ADS : Adaptor for power supply 230 Vac

BN : Black ball Ø 150mm with junction for temperature probe Ø 4,5mm. Further dimensions available.



JAC : Set of 4 LR6 batteries



CHA : 4 batteries charger



WARRANTY PERIOD

Instruments have 1-year guarantee for any manufacturing defect (return to our After-Sales Service required for appraisal)

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Simplified user manual

Pressure / Temperature / Humidity / Air velocity / Airflow / Sound level

TM 200 U

Special determination of U coefficient



Preamble

This document provides instructions for easy use in the solely to determine the U coefficient U.

This instrument is also supplied with a user manual which defines exhaustively all functions and general features of the instrument.

1. Overview

Your TM 200 U kit includes :

1. Measurement instrument + its protective housing



2. One thermocouple module



3. Three wireless thermocouple probes to measure the temperature of wall face



4. One ambient thermocouple probe



5. One ambient Pt100 wire probe



6. Fixing paste for probes

2. Determination and explanation of U coefficient

U coefficient is the most important value for the evaluation of thermal features of construction elements.

To calculate U coefficient, 3 temperature values are needed : the outside temperature, the surface temperature of the wall face, ambient air temperature. The wireless probe allows to determine the outside temperature easily and quickly when windows are closed. The probe is directly positioned outside and transmits the measurement value to the TM200 instrument through the wireless system.

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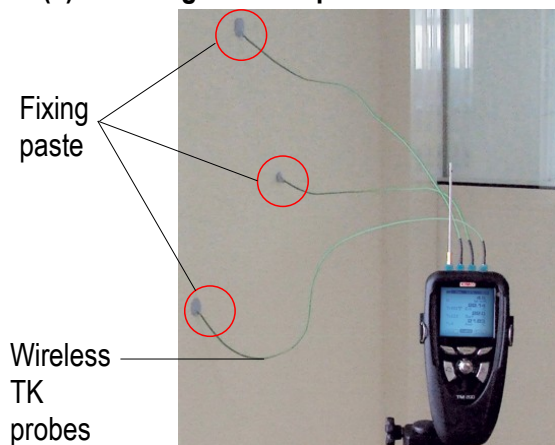
Once the three required temperatures are transmitted to TM200, the device calculates and displays U coefficient.

3. General procedure of measurement/calculation of U coefficient

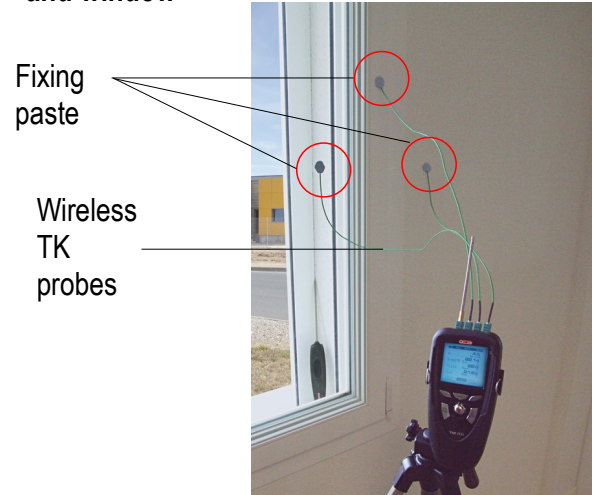
Steps to follow to calculate U coefficient :

- Connect the thermocouple module on TM 200 U.
 - Connect the ambient thermocouple probe on T4 channel of thermocouple module.
 - Connect the wireless thermocouple probes on T1, T2 and T3 channels of thermocouple module.
 - Fix wireless thermocouple probes on the wall face of the room as shown on the photo (1) or on an the wall face and the window (2).
- Put the ambient Pt100 wire probe outside (3).

(1) Installing wireless probe on the wall



(2) Installing wireless probes on the wall and window

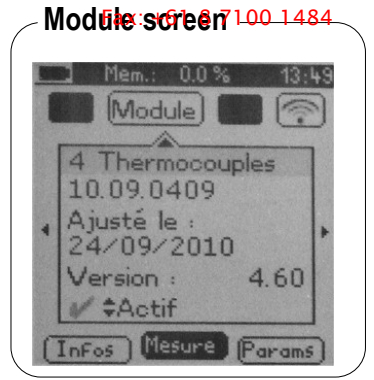


(3) Positioning wire probe



- Turn on the wireless ambient Pt100 probe.
 - Turn on the TM 200 U instrument pressing ON/OFF key.
- TM 200 U directly displays **"Module"** screen.

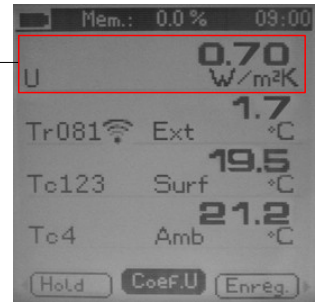
- Press **"Mesure"** button.
- TM 200 U displays temperature of the different probes.



- Go to Coef.U with the joystick then press **OK**.
- U coefficient value appears on the top of the screen.

U coefficient screen

U coefficient value



Following values are also displayed :

- Outside temperature value
- It is the value of outside temperature given by the wire Pt100 probe.

U coefficient screen

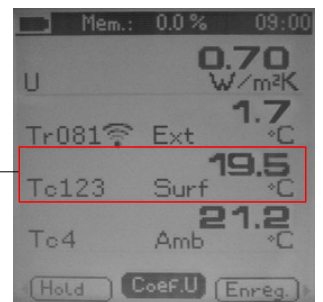
Outside temperature value



- Value of the temperature of thermocouple probes.
- This value is an average of temperature of the wall face given by wireless probes connected to the thermocouple module.
- Each probe connected to a channel will be identified (next to "Tc" on the screen)
- A single probe can be connected.

U coefficient screen

TK probe temperature value



- Value of the temperature of ambient probe
- It is the value of the temperature room.

U coefficient screen

Ambient probe temperature value



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